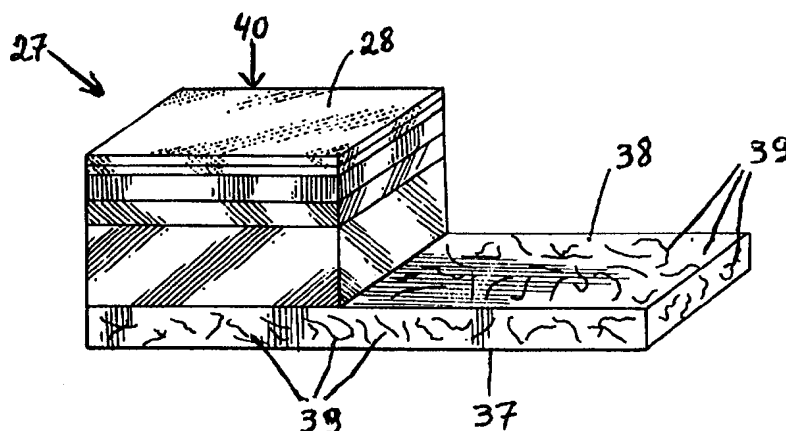




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/BR99/00073 (22) International Filing Date: 3 September 1999 (03.09.99) (30) Priority Data: PI 9803570-3 11 September 1998 (11.09.98) BR (71) Applicant (for all designated States except US): COMPANHIA SUZANO DE PAPEL E CELULOSE [BR/BR]; Avenida Brigadeiro Faria Lima, 1355-5° ao 10° andares, CEP-01452-919 São Paulo, SP (BR). (72) Inventor; and (75) Inventor/Applicant (for US only): FIGLIOLINO, Fábio, Carucci [BR/BR]; Rua Capitão Leônicio Arouche de Toledo, 321, Mojilar - Mogi das Cruzes, CEP-08773-140 Estado de São Paulo, SP (BR). (74) Agent: DO NASCIMENTO, Marcello; Praça Ramos de Azevedo, 209-6° andar-Conj. 61, CEP-01037-010 São Paulo, SP (BR).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>

(54) Title: PROCESS FOR MAKING CARDBOARD HAVING SAFETY MEANS



(57) Abstract

The invention relates to a process for making a cardboard having safety means which is suitable for such products as pharmaceutical packages. The safety means prevents forgery and confirms the legitimacy of the package. A multilayer cardboard is made by papermaking method. The multilayer cardboard (27) has a safety means which comprises a surface layer of white cellulose fibers (38) in admixture with several synthetic fibers (39) which are treated so as to be hardly visible to the naked eye but are visible under special lighting. The Safety means further has a colored core (41) in contrast to the other white cellulose layers (42). The color core cannot be accessed without rupture or destruction of the external layers.

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PROCESS FOR MAKING CARDBOARD HAVING SAFETY MEANS

The present patent of invention relates to a process to obtain a special cardboard with safety means, for pharmaceutical packages and others, and product obtained, said obtaining process and product obtained are studied in their very details, in order to characterize something truly new, practical, functional and highly safe.

The present process to obtain a special cardboard with safety means, for pharmaceutical packages and others, and product obtained, belongs to the technical field of manufacture of paper, cardboards and the like.

Currently, pharmaceutical industries have been facing a serious problem, which is the forgery of their packages, as well as their medicines.

As it is known, every medicine should be packaged, even those forged and, in this case, forgery goes through the creation or copy of a package.

Thus, the certified medicine industry (laboratories) has a true interest in guaranteeing the recognition of its legitimate product, and, at the same time, making difficult or clear the presence of a copy.

Medicine packages are most of the times comprised by several items that may be imitated in the forged product, and, in this manner, the commitment in order to avoid forgery should encompass several divisions involved in the production chain, that is, laboratories, package and raw material manufacturers.

It is known that one of the most common items of the packages is the cartridge (cardboard box) which encases another package (another item) with blisters, vials, envelopes, etc., said cartridges being manufactured from cardboard cellulosic raw material, in a print shop (converter) that prints

the medicine characteristic graphics, and also carries out the operations of cutting, wrinkling and gluing the printed material; afterwards the empty cartridge is sent to the laboratory to be used for packaging the medicine.

5 Thus, the applicant herein, being a traditional manufacturer of raw materials for packages, in order to contribute to a conclusive solution for forgery problems, specially of medicine packages, researched, developed and rendered the present process feasible, which resulted in the attainment of
10 a special cardboard, which safety means prevent, in an efficient, practical and functional manner, any forgery attempt of said medicine packages.

 Thus, the applicant herein, as a manufacturer of such cellulosic raw material, through the attainment of its special
15 cardboard, intends to guarantee the legitimacy of the cartridges, adding safety means with breakthrough characteristics to its special cardboard, which are comprised by:

- single surface, easily recognized and difficult to reproduce;
- 20 - colored core, easily recognized and difficult to reproduce, noticed at the moment the package is opened.

 The attached drawings illustrate, in figures 1 to 7, the process to obtain a multilayered cardboard with a couché cover, currently used in the manufacture of cartridges for medicine
25 packages.

 Cardboards currently used in cartridges manufacture are produced in equipment that form layers of cellulose fiber, as paper sheets, which are assembled when wet, in order to form the multilayered final structure, the paper being formed from
30 a dispersion of cellulose fibers in water, which is evenly poured on a moving mesh 1, so as to water is filtered by said mesh and fibers are piled up, forming a continuous sheet, as illustrated in Figure 1, which comprises a mesh scheme, where

the paper sheet is formed. In this mesh scheme shown in Figure 1, it is provided, in addition to mesh 1, mass supplying set 2; headbox 3, lip 4, composition table 5, "hydrofoils" 6, suction boxes 7 and drainage rolls 8, paper improving cylinder 9, suction 10, handle 11, mesh 12 and top 13.

Furthermore, after the first drainage over mesh 1, sheet 14 is pressed in order to lose more water, and, in Figure 2, a paper machine presses scheme is shown, where top 15, bottom 16 and felt 17 rolls of the first press and top 18, bottom 19, guide roll 20 and felt 21 rolls of the second press are provided.

Afterwards, when water drainage by mechanical means becomes too difficult, said sheet 14 begins to lose moisture by heat, through contact with heated cylinders 22, as shown in Figure 3, referring to a paper machine dryers scheme, being also provided rolls 23 of felt drying and ventilation.

After drying, sheet 14 is wound over a winding cylinder 24 (Figure 4), and then forwarded to the finishing phases, such as cut in smaller reels or flat sheets of several shapes.

On the other hand, during the formation process of sheet 14, it is possible to add other layers 25, formed in similar meshes 26, in order to create a multiple sheet, which is the cardboard 27 itself, the scheme of forming meshes of a cardboard machine being shown in Figure 5, while cardboard 27 structure scheme is shown in Figure 6.

Moreover, a lattices and mineral pigment-based paint cover 28 (couché paint) is applied to the multilayered sheet or cardboard 27, in order to improve the surface of said cardboard and allow better printing results, being that said application may be carried out in one or more layers. In Figure 7, a scheme of the application of couché paint is shown, in which an immerging cylinder 29, an application cylinder

30, a paint reservoir 31, a deflecting and recovering system 32, a gas chamber 33, a blowing lip 34, a top cylinder 35 and a suction belt 36 are provided. Thus, the description of the process to obtain the cardboards currently used in the manufacture of cartridges is completed.

The process to obtain a special cardboard with safety means, for pharmaceutical packages and others, and product obtained, as illustrated in Figures 8 to 10 of the attached drawings, is characterized in that the multilayered cardboard 27 is provided with safety means, which initially comprise a single surface 37, being easy to recognize and difficult to reproduce, because, when white cellulose fibers 38 are mixed, being provided several synthetic fibers 39 having one or more colors, or treated so as to make them hardly visible to a naked eye, but evident under special lightning, such as exemplified, but not limited to ultraviolet (Figure 8), said single surface 37 being the external layer opposed to layer 40 which will be printed (printing is carried out over couché paint 28), that is, the layer facing the inside of the finished cartridge. In the composition of single surface 37, a special pigment may be added, which will become active, and absolutely perceptible when single surface 37 receives a solvent.

Moreover, multilayered cardboard 27 safety means are also characterized in that a colored core 41 is provided, being easy to recognize and difficult to reproduce, in contrast with the other white cellulose layers 42 (Figure 9), the core being generally any layer or the internal cellulose layers set of cardboard 27, and since it is not accessible in any phase of cartridge production, colored core may not be counterfeited or modified in any manner in its whole extension, because the access to it may only be possible upon the rupture or destruction of the external layers.

Finally, the product obtained comprises a special cardboard provided with safety means, initially comprising a single surface 37, being easy to recognize and difficult to reproduce, since, when white cellulose fibers 38 are mixed, there are provided several synthetic fibers 39 having one or more colors, said single surface being the only external layer facing the inside of the finished cartridge and, further, said safety means comprising a colored core 41, which is easy to recognize and difficult to reproduce, in contrast with the other white cellulose layers 42, the core being generally any or the internal cellulose layers set of cardboard 27 (Figure 10).

With the special cardboard so obtained, said special cardboard, through its safety means, allows the medicine package cartridges to be easily and safely identified, assuring the legitimacy thereof in the following ways:

a) The user, when opening a medicine package cartridge, will recognize the legitimacy thereof, by checking whether its internal surface, opposed to the printed external surface, is provided with several synthetic fibers of one or more colors, mixed to the white cellulose fibers. Thus, the confirmation of the presence of such synthetic fibers in the internal surface of the cartridge is the guarantee of the legitimacy thereof.

b) Likewise, the user, when opening a medicine package cartridge, will recognize the legitimacy thereof, by checking the presence of the colored core. In order to do so, the colored core may be disclosed through some special cut in the cartridge, that exposes said core when it is opened, or in a less automatic manner, by a tear in any part of the cartridge.

Thus, with the development of the special cardboard with safety means concerned, which simply, accurately and safely

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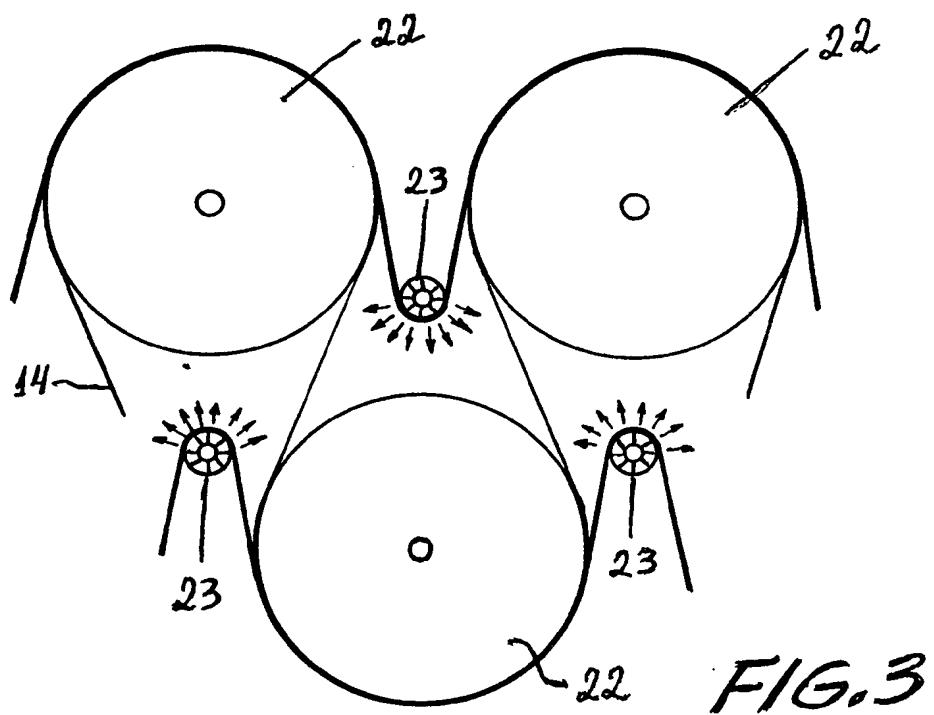
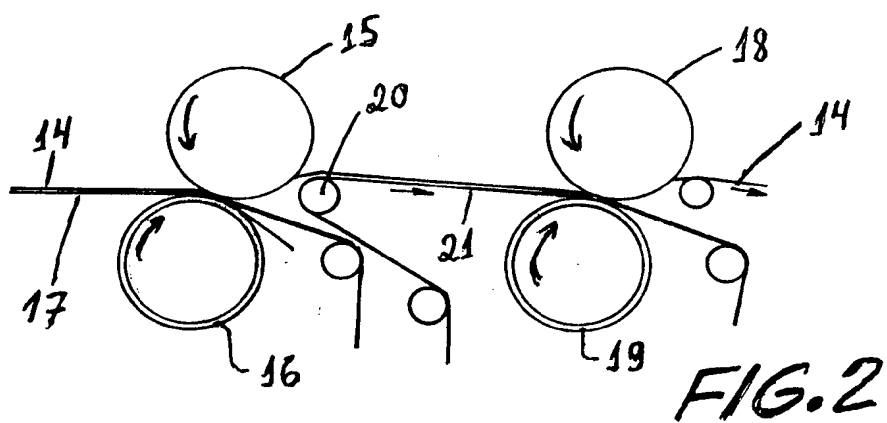
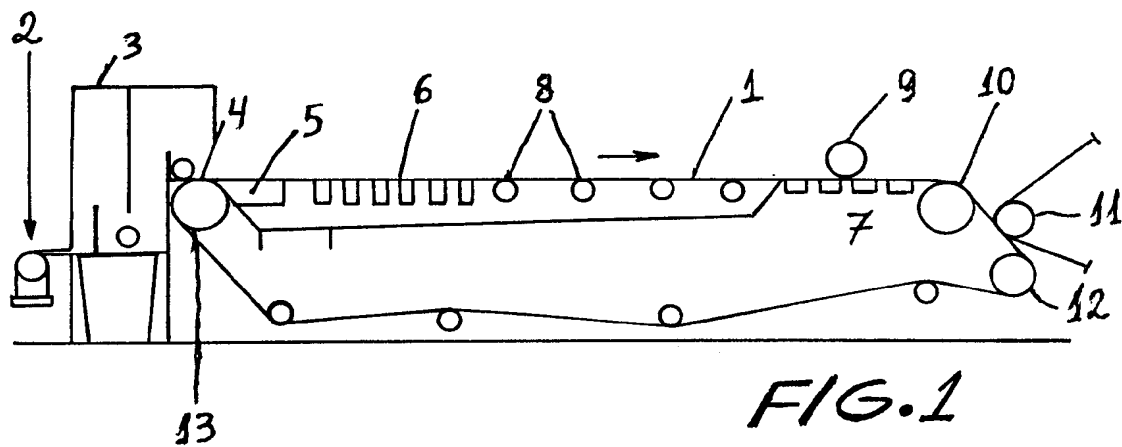
guarantees the legitimacy of medicine package cartridges, the applicant herein contributes in a crucial manner for the solution of the forgery problem of said cartridges.

CLAIMS

1.- Process to obtain a special cardboard with safety means, for pharmaceutical packages and others, and product obtained, comprising a multilayered cardboard (27), which is
5 obtained in equipment that form layers of cellulose fibers, as paper sheets, that are assembled when wet in order to form the several layer cardboard final structure, characterized in that said multilayered cardboard (27) is provided with safety means, which initially comprise, a single surface (37), being
10 easy to recognize and difficult to reproduce, because, when the white cellulose fibers (38) are mixed, there are provided several synthetic fibers (39) having one or more colors, or treated so as to make them hardly visible to a naked eye, but evident under special lightning, such as, exemplified but not
15 limited to, ultraviolet, said single surface (37) being the external layer opposed to layer (40) which will be printed, that is, the layer facing the inside of the cartridge and, further, in the composition of the single surface (37), a special pigment may be added, which will become active, and
20 absolutely perceptible, when said single surface (37) receives a solvent.

2.- Process to obtain a special cardboard with safety means, for pharmaceutical packages and others, and product obtained, as claimed in 1, characterized in that the safety
25 means further comprise a colored core (41), being easy to recognize and difficult to reproduce, in contrast with the other white cellulose layers (42), the core being generally any or the cardboard internal cellulose layers set (27), and since it is not accessible in any phase of the cartridge pro-
30 duction, the colored core may not be counterfeited or modified in any manner in its whole extension, because the access to said core may only be possible upon the rupture or destruction of the external layers.

3.- Process to obtain a special cardboard with safety means, for pharmaceutical packages and others, and product obtained, as claimed in 1 and 2, characterized in that the product obtained comprises a special cardboard provided with safety means, initially comprising a single surface (37), in which white cellulose fibers (38) are mixed to several synthetic fibers (39) having one or more colors, said single surface being the external layer facing the inside of the finished cartridge and, moreover, said safety means comprising a colored core (41) in contrast with the other white cellulose fibers (42), the core being generally any layer or the internal cellulose layers set of said special cardboard.



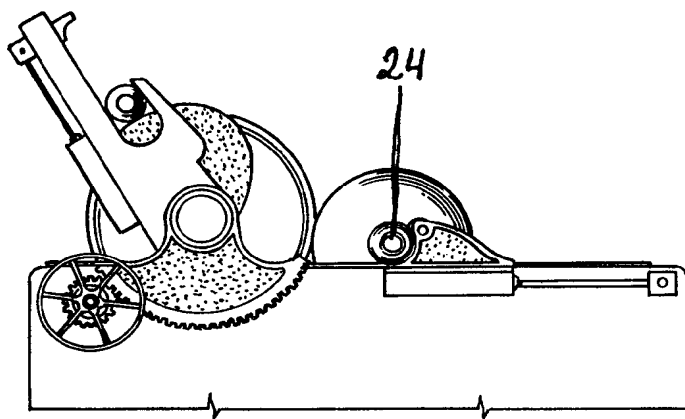


FIG. 4

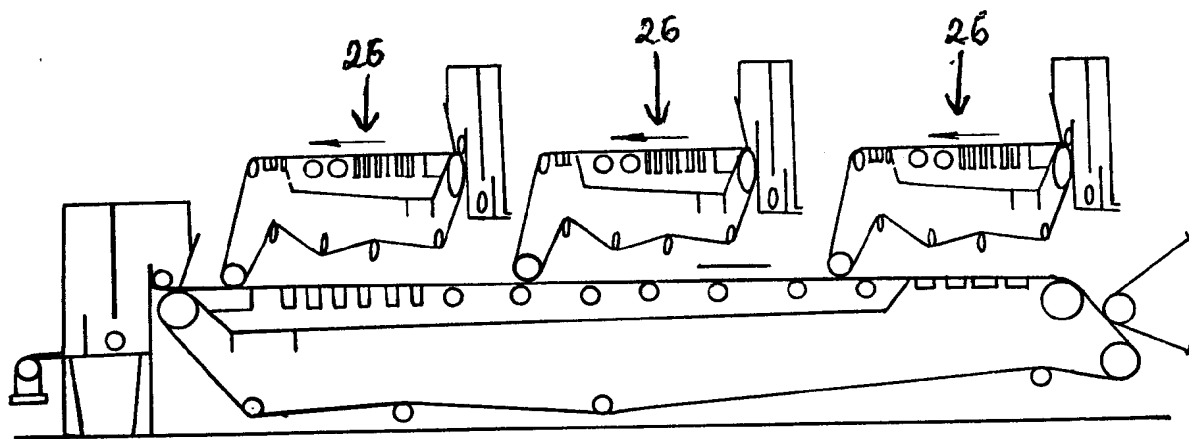
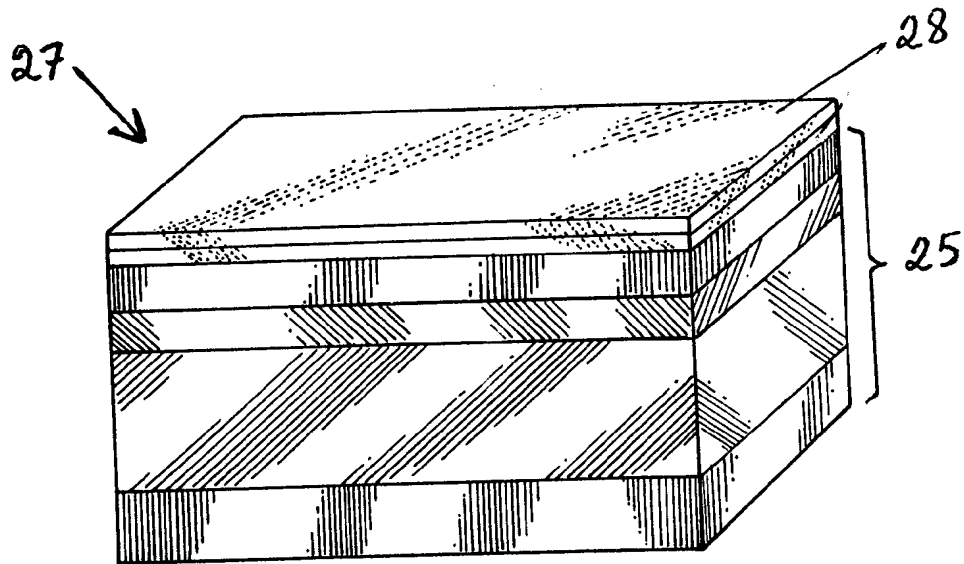
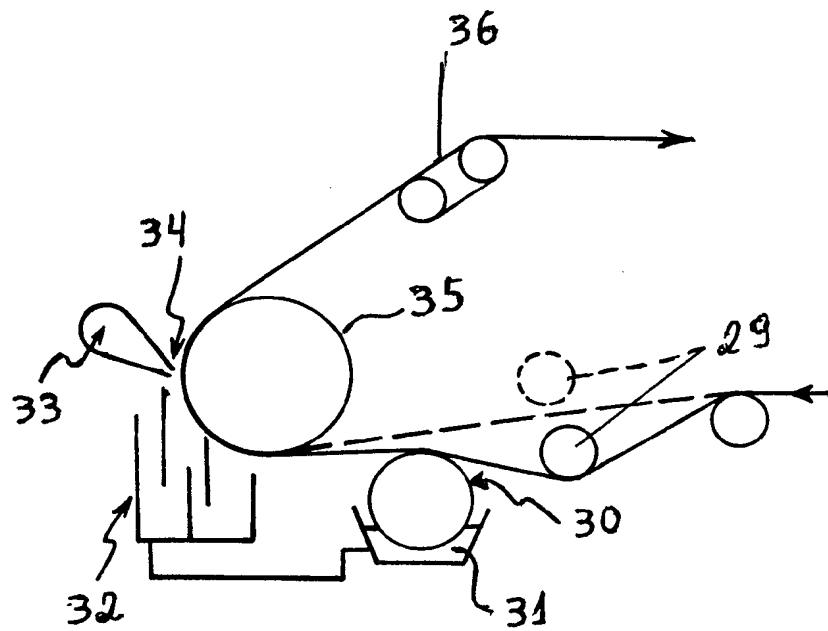
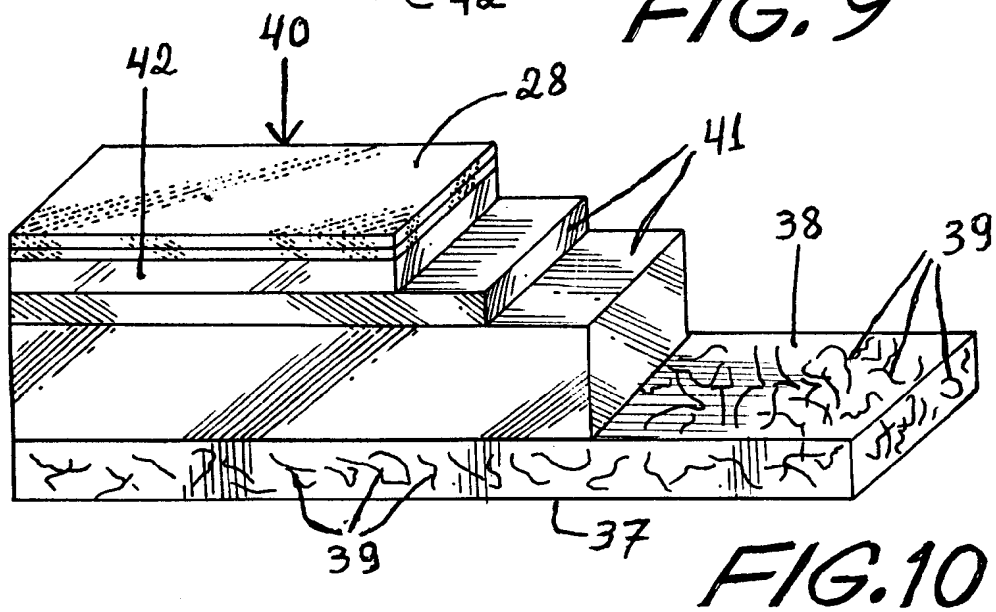
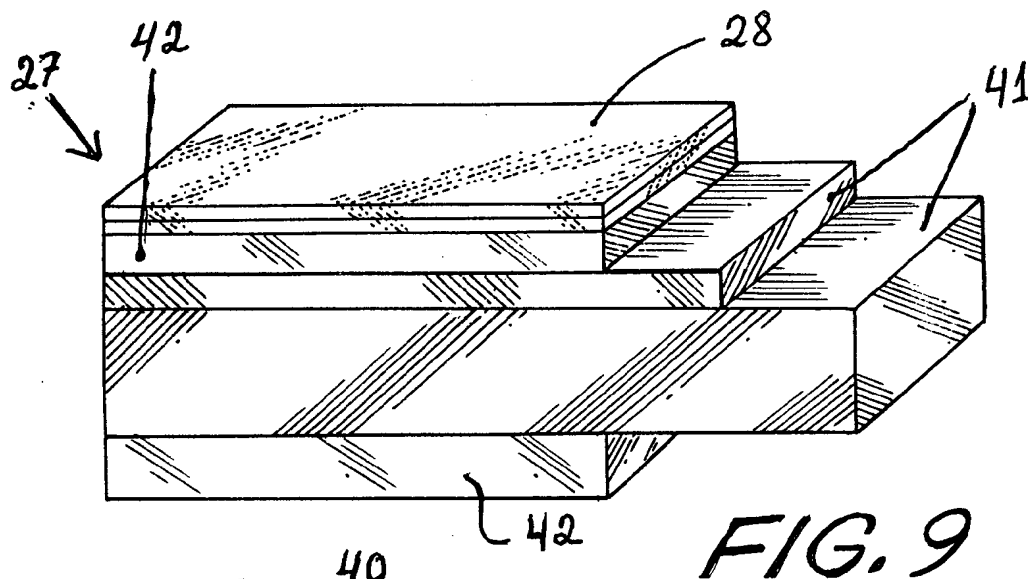
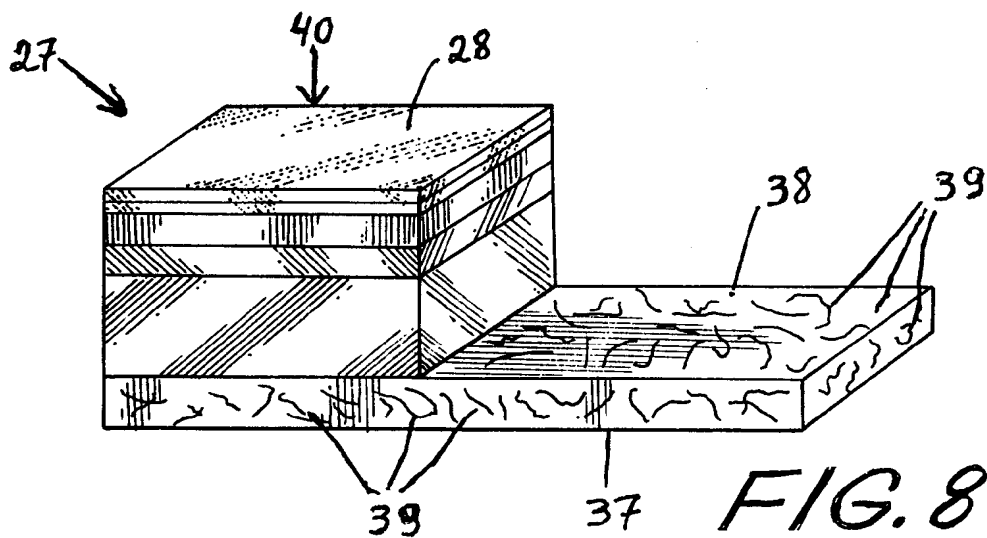


FIG. 5

*FIG. 6**FIG. 7*



INTERNATIONAL SEARCH REPORT

International application No.
PCT/BR99/00073

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :D21F 11/04

US CL :162/125

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 162/125, 126,127,129,140

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2,143,682 A (BROWN) 10 January 1939, see entire document.	1 and 2
Y	US 2,071,025 A (COLBERT et al) 16 February 1937, see entire document.	1 and 2
Y	US 38,835 A (OLIER) 09 June 1863, see the entire document.	1 and 2
Y	US 4,143 A (VARNHAM) 09 August 1845, see the entire document.	1 and 2
Y	US 2,208,653 A (WHITEHEAD) 23 July 1940, see entire document.	1 and 2
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☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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Date of the actual completion of the international search

13 JANUARY 2000

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/BR99/00073

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☒ Claims Nos.: 3
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

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2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.